

Tutorial for Chapter 7

SNMP Network Management: SNMPv3

NET 311 – Computer Network Management

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Last update: 15/12/2016

Problem 1

The first four octets of an SNMP engine ID in a system are set to the binary equivalent of the system's SNMP management private enterprise number as assigned by the IANA. Write the first four octets of the SNMP engine ID in hexadecimal notation for the four enterprises, (cisco, hp, 3com, and cabletron) shown in the figure below for the following two versions:

a. SNMPv1

b. SNMPv3

```
internet (1.3.6.1)
|
+---private(4)
|
+---enterprises(1)
|
+---cisco(9)
|
+---hp(11)
|
+---3Com(43)
|
+---Cabletron(9)
```

Solution

(a)

Cisco (9)	00000009
HP (11)	0000000b
3Com (43)	0000002b
Cabletron (52)	00000034

(b)

Cisco (9)	80000009
HP (11)	8000000b
3Com (43)	8000002b
Cabletron (52)	80000034

Problem 2

Write the full SNMP engine ID for:

- (a) SNMPv1 for a 3Com switch with the IPv4 address 128.64.46.2.
- (b) SNMPv3 for the Cisco router interface with IPv6 address ::130.207.46.1.
- (c) SNMPv3 for the Cisco router interface with IPv6 address 2f:87:c1::d5.

Solution

(a) 3Com (43) switch with IP address 128.64.46.2:

For IPv4, the address is filled in the 6th to 9th octets followed by 0s in the rest.

00	00	00	2b	01	80	40	2E	02	00	00	00
Enterprise ID. 1 st bit = 0				IPv4	128	64	46	2	Not used		

The answer is:

00 00 00 2b 01 80 40 2E 02 00 00 00

(b) Cisco (9) router with IPv6 address ::130.207.46.1

Note that this is an IPv4 address represented in IPv6 format.

80	00	00	09	02	02	00	00	00	00	00	00	00	00	00	00	00	00	82	CF	2E	01
Ent. ID. 1 st = 1				IPv6	Using IPv4 Address													130	207	46	1

The answer is:

80 00 00 09 02 02 00 00 00 00 00 00 00 00 00 00 00 00 82 CF 2E 01

(c) Cisco (9) router with IPv6 address 2f:87:c1::d5.

IPv6 requires 16 bytes.

- first three bytes are 2f, 87, c1
- :: means all zeros
- last byte is d5

80	00	00	09	02	2f	87	c1	00	00	00	00	00	00	00	00	00	00	00	00	d5
Ent. ID. 1 st = 1					IPv6	2f	87	c1	0	0	0	0	0	0	0	0	0	0	0	d5

The answer is:

80 00 00 09 02 02 2F 87 C1 00 00 00 00 00 00 00 00 00 00 00 00 D5

Problem 3

Write the VACM content of the snmpd.conf file to satisfy the following requirements:

- View **ipview** includes the subtree **.1.3.6.1.2.1.4.20** (ipAddrTable)
- View **sysview** includes the subtree **.1.3.6.1.2.1.1** (system)
- Group **netmgrs** is community based that uses SNMPv2 and community name: **private**.
- Group **admin3** uses USM security model and has the users: **ahmad** and **ali**.
- Group **netmgrs** has **read** and **write** access to view **ipview**.
- Group **admin3** has **read** access to view **ipview** and **write** access to view **sysview**, which require encryption and authentication (**priv**).

Solution

#VACM Config

#views

#		incl/excl	subtree	[mask]
view	ipview	included	.1.3.6.1.2.1.4.20	
view	sysview	included	.1.3.6.1.2.1.1	

#group to community mapping

#	sec.name	source	community
com2sec	private	default	private

#groups, security models and users

#		sec.model	sec.name
group	netmgrs	v2c	private
group	admin3	usm	ahmad
group	admin3	usm	ali

#access

#		context	model	level	prefix	read	write	notify
access	netmgrs	"	any	noauth	exact	ipview	ipview	none
access	admin3	"	any	priv	exact	ipview	sysview	none